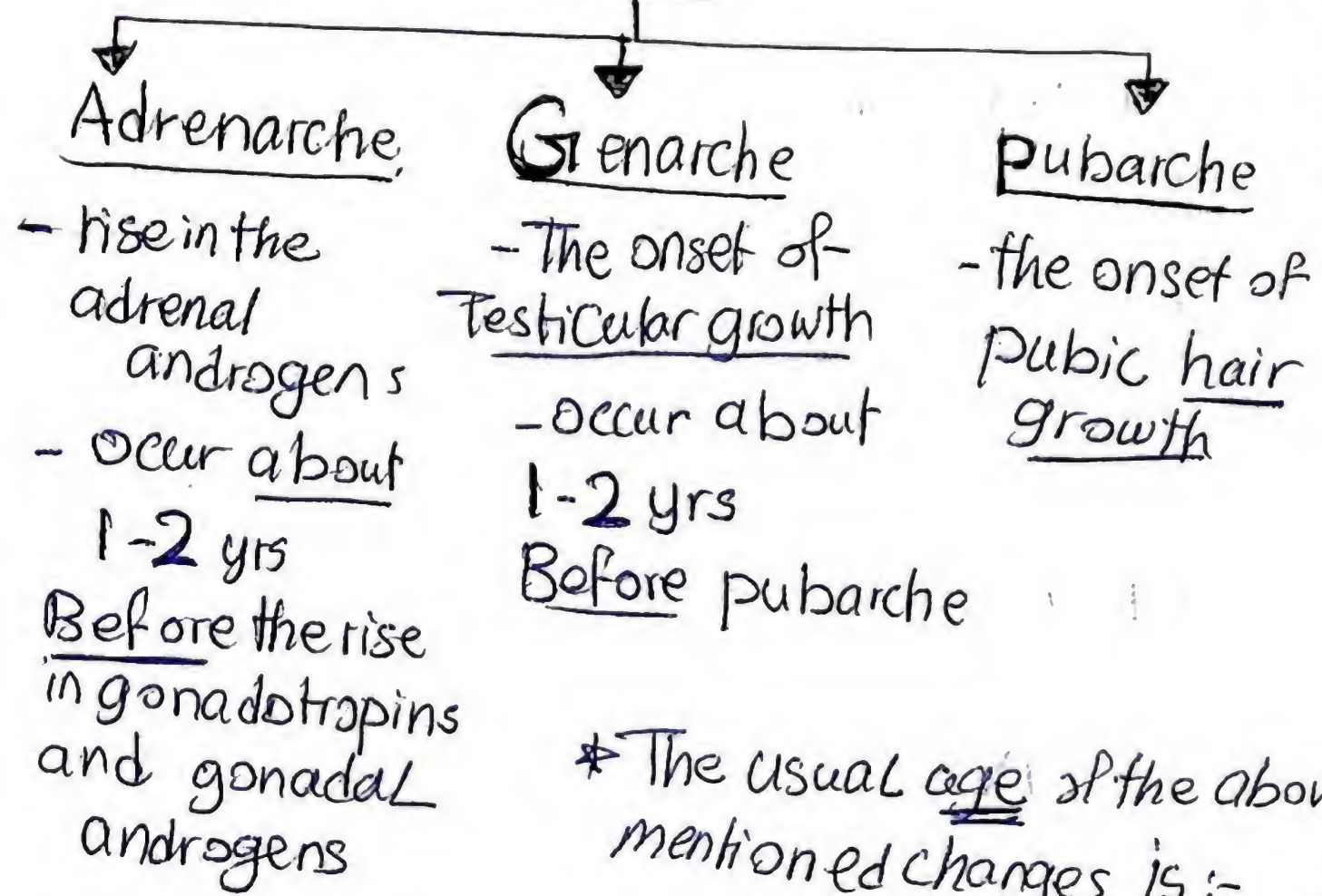


Sexual Maturation [puberty]

①

I - Terminology:

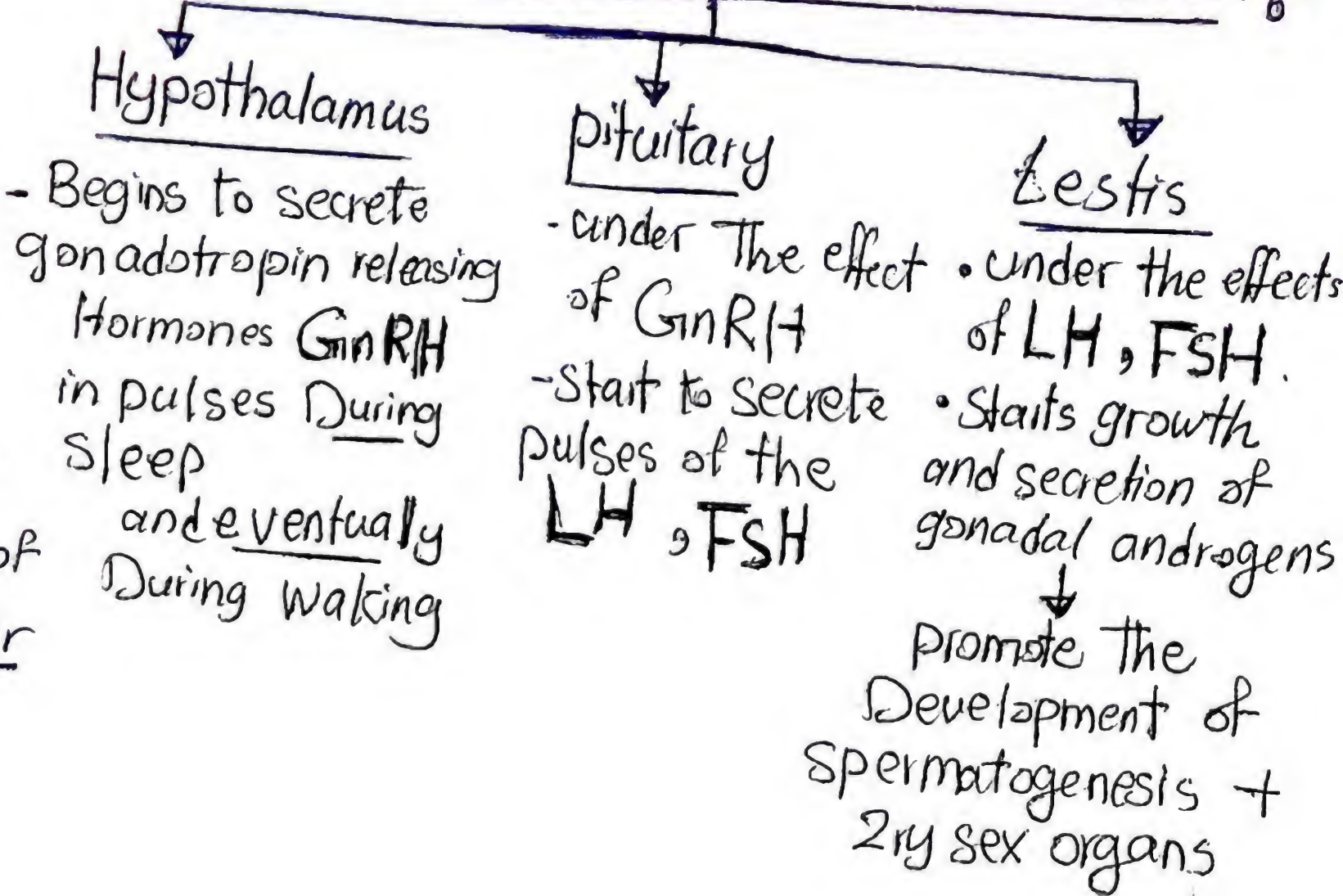
- puberty → period of which the Reproductive organs Starts Their function
- Adolescence → Period That extends from puberty till Complete Maturity
 - it include 3 items:



* The usual age of the above mentioned changes is:-
9-14 yrs

II - Mechanisms of puberty

A Levels of Pubertal Maturation:-



Amylee

B Theories of the onset of pubertal maturation :-

↳ (a) Hypothalamic mechanisms: (gonadostat)

- Normally → gonadostat :- means that the Hypothalamus is sensitive to -ve feedback inhibition of the low levels of gonadal hormones since birth.

Accordingly → The hypothalamus doesn't produce its (GnRH).

- Puberty may be explained by :- Readjusting of this gonadostat by :- ↓↓ hypothalamic sensitivity and release of the hypothalamus from the inhibitory effects of gonadal hormones with subsequent production of (GnRH)

↳ (b) Extrahypothalamic Mechanisms:

- There may be other extrahypothalamic centers in the brain

That initiate the onset of puberty

C Gonadal mechanisms:-

- ↑↑ Sensitivity of the testis to the circulating gonadotrophins at the onset of puberty.

III - Changes of puberty

A Clinical changes:-

↳ a. Genital stages :-

- Stage I :- prepubertal, testicular length $< 2.5 \text{ cm}$
- Stage II :- First testicular enlargement $> 2.5 \text{ cm}$ in length
 - Scrotal reddening
- Stage III :- first penile enlargement
 - Further growth of Testis
- Stage IV :- further growth of Testis and penis
 - Darkening of Scrotal skin
- Stage V :- Adult Genitalia

→ B - Pubic Hair Stages :-

Stage I :- prepubertal - No pubic hair
Stage II :- sparse growth at the base of the penis

Stage III :- Darker, Coarser, Curled hair → spread to mons pubis.

Stage IV :- Adult type of hair But doesn't spread to the medial sides & the thigh

Stage V :- Adult type of hair that spreads to the medial thighs.

Stage VI :- Adult type of hair that spreads to the linea alba.
- occur in males only

→ C - Physical growth :-

puberty → genital growth and maturation

Under the effect of gonadal hormones associated e:-

General Body growth + Skeletal maturation (3)
(Adult growth spurt) under the effect of growth hormones

- The peak High velocity :- obtained 2 yrs after the testicular enlargement

- The skeletal mass → Doubles Between 12th and 16th years of life

Testicular Histology Changes :-

• Resting phase

• From Birth to 4th yr

• Seminiferous Tubules → small in Diameter

• No cell Differentiation

• Growth phase

• From 5th - 9th yr

• Tubules → elongated tortuous Larger Diameter

• No cell Differentiation

• Maturation phase

• From 9th to 15th yrs

• more elongation and tortuosity and enlargement of Tubules

• Cellular Differentiation into different spermatogenic cells

④ IV - Physiology of Androgens

A Formation of Androgens

• First step :- Formation of Cholesterol which is derived from the Low density lipoprotein or synthesized de novo in the Leydig cells from acetyl Coenzyme A

• Second step :- Transformation of Cholesterol into Pregnenolone → under the effect of the enzyme Cytochrome P45

• Third step :- Conversion of Pregnenolone into Testosterone through Intermediate Products :-
→ Progesterone
→ 17-OH - Progesterone
→ androstenedione

B Transport of Androgens :-

- Androgen → Transported in the Bloodstream By 3 ways :-
→ Bound to Albumin (54%)
→ Bound to Sex Hormones Binding Globulin (SHBG) (44%)
→ Circulate in the free form (2%)

C Transformations of Androgens :-

- Androgen transformed to different forms in order to exert their actions on the target tissue.

→ First and Main Form :- Testosterone

- act Directly on some organs as → muscles

→ Second form :-

Dihydrotestosterone

produced from testosterone By the enzyme 5- α - Reductase

- It's the active form in

→ 3rd form :-

Oestradiol :- By aromatization of testosterone By aromatase enzyme - active form in CNS

Prostate
Seminal Vesicles
Vas deferens
epididymis

Biological effects of Androgen

➔ ① Prenatal effect:-

- Androgens → essential for the development of
 - Internal genital Ducts
 - External genitalia
 - descent of the testis

➔ ② Postnatal Effects:-

➔ 1- effect on CNS:-

Sexual effect
Androgen Responsible for → Sexual Desire

Psychological
Androgen Response able for →

- aggressiveness
- Self Confidence
- mood elevation
- Intellectual skills

Endocrinal
- Androgen exerts →

- Ve Feedback
- ↓
- inhibit Release of GnRH-LH
- after their aromatization to estrogen

➔ 2- effect on the reproductive system ⑤

- effect on the Testis:-

- LH → stimulate Leydig cells to produce → androgens → essential for:
 - initiation of spermatogenesis during puberty helped by (FSH)

- Once spermatogenesis is established
↓
testosterone only :- Required for maintenance.

• effect on the internal genital organs:-

- 3 forms of Androgens → testosterone
 - ↓
 - ↳ Dihydrotestosterone
 - ↳ Oestradiol
- Important for growth and development of the
 - epididymis
 - vas deferens
 - Seminal vesicles
 - prostate

- failure of androgen production → leads to:
 - Atrophy of these organs
 - Aspermia

⑥ effect on the external genital organs:

- Both \rightarrow testosterone
 \rightarrow Dihydrotestosterone
are Responsible for \rightarrow penile growth till puberty
- administration of androgens after Puberty \rightarrow Don't increase the penile size

\rightarrow 3- Metabolic effect of Androgen:-

a) Skeletal system:

- Testosterone is Responsible for $\uparrow\uparrow$ mass of the Muscles Through: Hypertrophy of the fibers
 But without change in number of these fibers
- also $\uparrow\uparrow$ The growth of Larynx
 \rightarrow Deep voice
- Both Testosterone + estrogens \rightarrow $\uparrow\uparrow$ Bone density and growth at the Beginning of puberty.

b) Skin:-

- Testosterone and Dihydrotestosterone \rightarrow Stimulate Sebaceous glands \rightarrow Acne
- They are necessary for the growth of Body hair: Beard, mustache, axilla, pubic.
- Scalp hair: temporal recession may be Baldness in male & High 5- α Reductase activity

c) Hematological effect:

- Androgens \rightarrow Stimulate formation of RBCs
 \rightarrow $\uparrow\uparrow$ Synthesis of haemoglobin
- may be related to the levels of High Blood Lipids from the observation that the risk of Coronary atherosclerosis is twice high in men than women.

● Clinical important points

1- preclinical Detection of Puberty

- Puberty can be detected even before any clinical signs of it when there is $\uparrow\uparrow$ in LH and FSH

Considered initial central nervous system phase of puberty

2- Early Clinical detection of Puberty:

\uparrow in Testicular volume is the earliest and most important clinical sign of puberty.

- \uparrow from (1-3) mL Before puberty to (12-25) mL after puberty

3- Pubertal Gynecomastia

- 75% of adolescence Boys \rightarrow experience transient and

tender gynecomastia \rightarrow Unilateral or Bilateral (7)

- Related to: Conversion of $\uparrow\uparrow$ levels of testosterone into oestrogens By: - aromatase enzyme

- Show: - Spontaneous cure

- The Resistant Cases \rightarrow treated By \leftarrow Tamoxifen
Clomiphene

- weight Reduction, surgical excision

Psychosexual Maturation

①

Introduction

- Sexuality :- like other personality components start to develop since Birth
- sex of individual is determined By :-
genetic sex, gonadal sex, psychological sex
- Psychological sex depends on :-
- Biological Sex
- other factors :- parents - child Relationship learning - Social factors
- proper psychosexual maturation depends on :-
- healthy enough experience During each phase of the Development
- to allow healthy transition to following phase

1 Childhood Sexuality :-

A Autistic-Symbiotic phase :

1. The first 6 months of life
2. essential feature :- intimate Mother-Child Relationship
 - help to give feeling of comfortable intimacy
 - Trust of the mother → the basis for healthy sexual intimacy in adult life
 - This healthy stable Relationship → lead to :- Satisfaction of the infant primitive needs
 - Conflicts at this stage → Failure in sexual intimacy or satisfaction later on
3. The Oral Zone :- The Center for the pleasure and excitement of the infant
 - The mouth → at this stage Acts as :- organ of nourishment, exploration, physical psychological satisfaction.

B Separation-Individuation phase:

- 1- From 6 months till The 3rd year of life
- 2- The essential feature in mother-child Relationship is: Development of the Capacity of the child to separate and Return to the mother again
 - The Father: start to play important Role
 - Conflicts → Failure in sexual Separation and Closeness later on
- 3- The anal Zone: become area of interest at this stage
 - This anal eroticism may be reaction to toilet Training at this stage
Rather than → True eroticism
- 4- Gender identity:
 - The inner feeling of being male or female
 - Start to develop by age 2 yrs
 - Complete at age 4 yrs
 - Conflicts → gender identity disorders

C Oedipal phase:

- 1- This phase around The age 5 yrs
- 2- essential feature: the attraction of the child to the parent of the opposite sex with Jealousy and -ve feeling to same sex.
 - This Conflict in the relationship → Oedipus Complex in Boys
Electra Complex in girls
 - ↳ Normally → This ~~conflict~~ Complex Resolved with further Development
 - [The strong Desire of the Boy toward his mother Transformed into desire toward a female-like his mother. Jealousy toward his father transformed into desire to identify with or become similar to his father]
- 3- The Genital Zone → Become area of interest
 - ↳ Boys concern about presence of penis
 - ↳ girls: concern about its absence

- The end Result is:
- Development of Castration anxiety in Boys (fears of loss of penis)
- penis envy in girls (feeling of deprivation from the penis)

4 - Genital manipulation:

- start as an early primitive form of masturbation that is normal During their development
- The Parents -ve Reaction when they discover their children in these situations may be a Cause of Sexual disorders later on
- The Best way is to deviate the attention of the child toward Doing another non-Sexual act or play in very Calm attitude

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Latency Phase ③

- 1- age 6 yrs to 12 yrs
- 2- essential feature → relatively Calm sexual feelings and attitudes of the child with strong tendency for More Social Relations

- other authors observation that:- The sexual interest at this stage $\uparrow\uparrow$ Not $\downarrow\downarrow$
- The apparent latency During this stage if it's really exists:- may explain the parents prohibition of childhood genital manipulation Rather Than a True decline in sexual interest

Adulthood Sexuality :-

Adolescence phase:

- 1- Start from age 12 yr - 20 yr.
- 2- The essential feature is :- Pubertal physical

and sexual changes.

- The Dramatic changes in this stage may lead to psychological instability.

Resolved in presence
of Healthy parent-
child relationship

may Continue

many adolescence problems
↳ behavioural disorders
↳ Depression
↳ antisocial activities
↳ homosexuality
↳ Sexual perversions

3- Sexual Desire ↑↑ markedly at this stage

• The boys differ from girls that their desire is More intense → For all possible sexual partners and outlets

(Related to → Free testosterone level)

• The girls → more attracted to emotional aspects

and their desire Related mainly to :

Social, psychological effect and Learning

4- Masturbation : occur normally during stage.

• D.F : self-stimulation By the person to reach Orgasm

• Other names for it : → Autoeroticism
Secrete Sin ← → Auto Sexualism
Onanism ← → Lone Sexuality

• The act of masturbation :

- most Males → masturbate By Rubbing
The shaft of penis stroking
till → ejaculation occur

- Females → By indirect stimulation of the
Clitoris through the Labia or the mons
Veneris
as the clitoris is oversensitive to touch

• Frequency of Masturbation :

- varies w age & sex

- almost all Boys → start masturbation
During adolescence

- only 60% of girls → masturbate

- The frequency is more in Unmarried than
married men

Facts - Fictions about masturbation

- imagine the magnitude of wrong ideas and fictions about Masturbation
- Study Result show that 16% of the medical students and medical residents felt that there was an etiological Relation Ship Between Masturbation and mental illness

① Fiction: masturbation may lead to physical and mental deterioration

Fact: No physical or mental health hazards except of :-
Some guilty feelings > depression

② Fiction: may lead to premature ejaculation

Fact: The cause is not Related to Masturb But to → Mal-Conditioning to Rapid orgasms accompanying it as :- premarital sexual Relations → with Rapid orgasm → lead to same Results

③ Fiction: Masturbation in females → may lead to anatomical changes in genitalia Specially Clitoris

Fact: This Doesn't occur under Normal Conditions except : very rare Cases in some females undergo Daily multiple clitoral stimulation By a vibrator.

④ Fiction: Masturbations in females → may lead to Coital anorgasmia after marriage

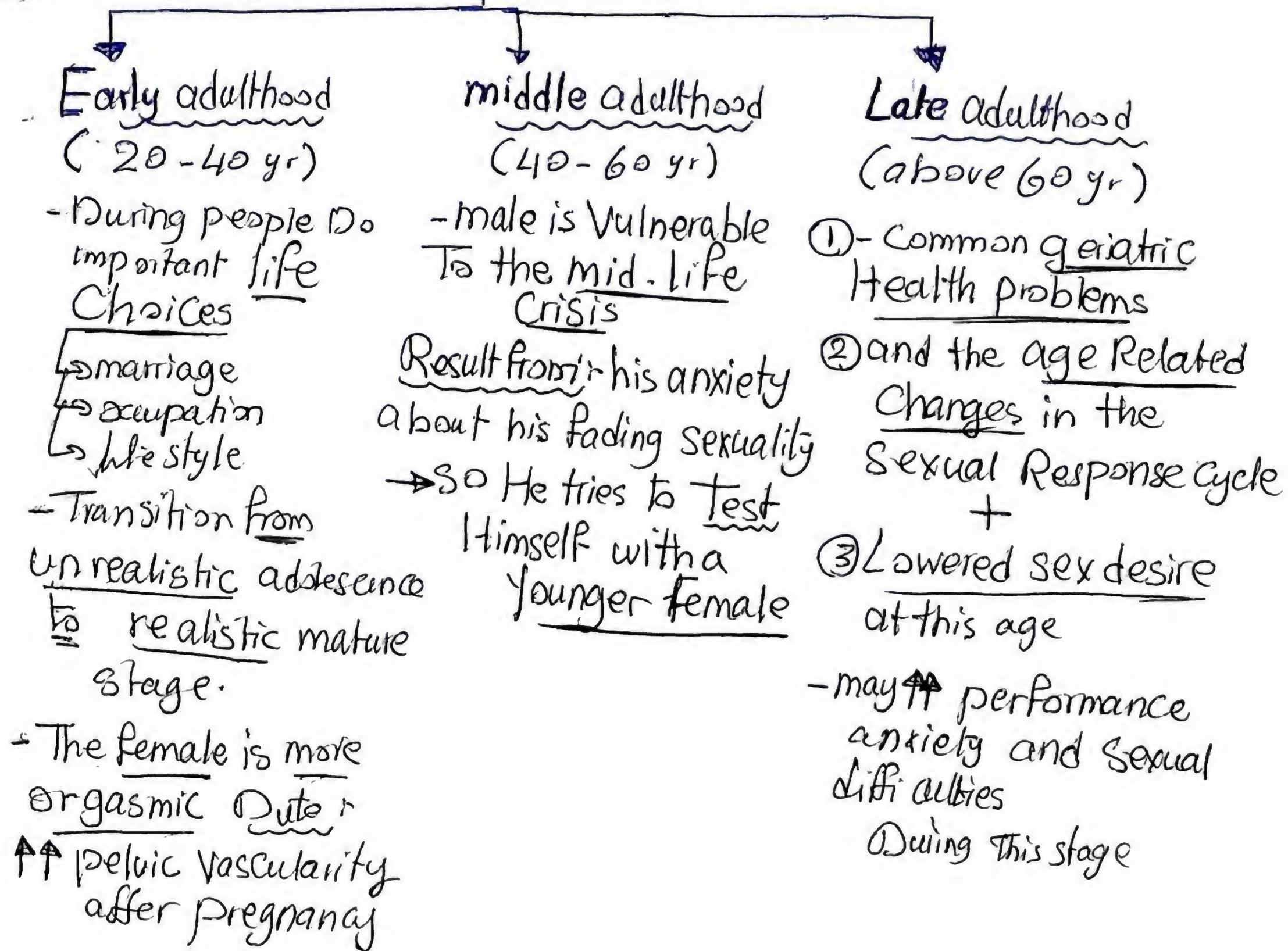
Fact: This Doesn't occur under Normal conditions
- if the husband is Co operative, with good level of Communications Between parents
- She can Direct him to her preferred method of genital stimulation to reach the orgasm.

⑤ Fiction: Masturbation may be a sign of Psychological immaturity

Fact: No study shown that adult persons who masturbate are immature Compared To that who don't masturbate

B Maturity phases

⑥



Intersex Disorders

①

- D.F. - conditions ch. ch by disturbances in one or more of the
 - genetic sex
 - gonadal sex
 - phenotypic sex

- These disorders leads to → Ambiguous Genitalia of the newborn

↳ Female genitalia e- variable degrees of Virilization

↳ male genitalia e- variable degrees of Feminization

- Early precise Mgmt → essential for giving the parents and family the Correct Decision about the sex of the infant

- early Diagnosis of some Conditions:-
CAH → helps to save the life of infant

- The Risk of Malignancy associated e- gonadal dysgenesis must be assessed

Classifications :

I Disorders e- Ambiguous External Genitalia :-

A Female pseudhermaphrodite

- most common Cause
- Infant e- genetic sex of the female (XX)
- The gonads are:- Ovaries e- normal Mullerian Structures as (uterus)
- External genitalia: show Varying degree of Virilization such as
 - Clitoral enlargement
 - labial pigmentation
 - Fusion in sever cases
- The Causes :-
 - excessive exposure of the infant to androgen During Pregnancy → which occur in 3 Conditions :

- a. Congenital adrenal Hyperplasia: CAH
- autosomal Recessive Disorder
 - defect in enzymes responsible for the conversion of Cholesterol \rightarrow Cortisol (21-hydroxylase, 11-hydroxylase)
 - compensatory excessive production of adrenocorticotrophic hormone (ACTH)
 - \Rightarrow excessive adrenal steroids \rightarrow Androstenedione
 - \Rightarrow Virilization

b. Female maternal intake of Virilizing Drugs

c. Maternal adrenal virilizing Tumors

- The assignment of the rearing sex:
 - Done early as possible
 - Early Cortisone Supplementation to suppress the elevated ACTH \Rightarrow and the elevated adrenal androgen
- \hookrightarrow will correct the only abnormality in these ptn that is (virilized external genitalia)

- Cortisone Therapy \Rightarrow will prevent the life-threatening adrenal crisis

- in Sever Cases:

Surgical Correction (Clitoroplasty)
During infancy with preservation of the Dorsal neurovascular bundle.

(Vaginoplasty) \Rightarrow During Puberty \Rightarrow For the cases of Labial Fusion
as early vaginoplasty \Rightarrow Scarring - Stenosis

B Male Pseudohermaphrodite

- Infant Genetic Sex \rightarrow male type (XY)
- The gonads \rightarrow testes.
- Mullerian Duct \rightarrow Regresses Normally as the testes produce (MIS)
- external genitalia \rightarrow Varying degrees of Feminization
- Main Cause \rightarrow lack of Androgenization of the genital system \rightarrow occur in 3 conditions

a- Defective Androgen production:

- autosomal Recessive disorder.
- Defect in \rightarrow One of the **5** enzymes of Testosterone production:

- 17- α hydroxylase
- 17- β hydroxysteroid dehydrogenase
- 17-20 desmolase
- 20-22 desmolase
- 3- β hydroxysteroid dehydrogenase

17- α , 20-22, 3- β \Rightarrow Common to Both Cortisol and testosterone Synthesis

Their defect \Downarrow Result in \rightarrow CAH + male Pseudohermaphrodite

17-20, 17- β \Rightarrow for Testosterone Synthesis only

Their defect Result in \rightarrow male Pseudohermaphrodite

- Clinical presentation Shows:-

- variable Degrees of feminization of external and internal organs

- The treatment depends on:- Replacement androgen & Cortisone Therapy

b- Defective Androgen Action:

(pseudovaginal penoscrotal hypospadias syndrome)

- Autosomal Recessive disorder
- Defect in enzyme **5- α -Reductase** \Rightarrow

That convert testosterone \rightarrow dihydrotestosterone

- variable degrees of Feminization of the external genitalia only which depends on: Dihydrotestosterone in their development

- The internal organs \Rightarrow Normal (as they depend on testosterone)

- may be: Severe hypospadias + variable Fusion of the Scrotal folds

- Diagnosed By:

- ④ • ↑↑ Testosterone/dihydrotestosterone Ratio
↳ after gonadotropin injection
- inability of the genital skin to convert testosterone → Dihydrotestosterone
- treatment depends on: Degree of Feminization of the external genitalia
 - ↳ if only hypospadias → Surgery
 - ↳ if sever degree of Feminization ⇒ Early male to Female Sex reassignment Surgery (Created as female)

C - Defective Androgen Receptors

(androgen Resistance syndromes, testicular Feminization Syndrome)

- X-linked
- Defect in: androgen Receptors in tissue
- in its Complete form:
(Complete Testicular Feminization)

Those ptns e male genetic sex (XY) ⇒ will have Female external genitalia

- The Mullerian Duct ⇒ will Regress
- ↳ D.t → M.I.S secreted from the testis
- ↳ Vagina ⇒ Short, ends in :- Blind pouch
- No Uterus or Fallopian tubes
- The Baby: reared as :- Female till puberty
When parents bring him for medical advice Ducts try amenorrhea.

- The Breast:

will Develop D.t conversion of some amount of Testosterone ⇒ estrogens

- Axillary - pubic hair :- Absent

- child reared as Female Because of:
(No surgery or Hormone can create a functioning penis or change the female appearance of Body)

- The testes:

Excised D.t Risk of Malignancy

- The Receptor defects: maybe Incomplete with variable degrees of ambiguous genitalia as
 - enlarged clitoris
 - Labial Fusion
 - Perineal hypospadias

which occur in Reifenstein Syndrome associated with Defective Spermatogenesis

- Other similar Syndromes of Incomplete androgen insensitivity:
 - Gilbert Syndrome
 - Lubs Syndrome
 - Rosewater Syndrome

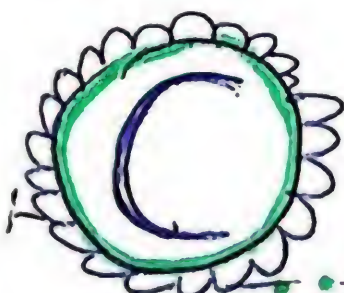
- The Mildest Form is defective androgen Receptors is :-

Infertile male Syndrome

- Complete normal male
- defective spermatogenesis only
- 1/3 of infertility associated with azoospermia

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- The Diagnosis of androgen insensitivity is ⑤ Quantitative or qualitative abnormal androgen Receptors (From fibroblast culture of genital skin)



True Hermaphrodite :-

- Genetic Sex → XX (70%)
→ XY (30%) or mosaic
- rarest Form of all intersex Disorders
- Ch. by: Presence of Both ← male female gonads in the same individual
→ maybe ovary in one side & testis other side
- Present in varying degrees of :- Ambiguous genitalia
 - Hypospadias
 - undescended testis
 - Labial fusion
- The internal Ducts → will develop according to the gonads at the same side.

⑥ The ovarian Component of the hermaphrodite gonads :- Better Developed Than testicular Component

• At least 6 True hermaphrodites reared as females have been Reported to achieve Pregnancy

• most Cases of True hermaphroditism Better reared as Females \Rightarrow preservation of the ovarian tissue and Mullerian Structure if normal

D Mixed Gonadal Dysgenesis :

• Genetic Sex \Rightarrow 46 XY
 \Rightarrow 45 XO / 46 XY karyotype.

• ch. ch By \Rightarrow Presence of testis on one Side , Streak gonad on other side

• present By \Rightarrow Ambiguous genitalia in performing sex assignment

• The following Factors should be considered :-

1- Fertility should Not be considered as the :-
gonads have NO germinal elements

2- half of these pts will be \rightarrow Too Short

3- Inadequate virilization of the external genitalia will Require multiple complicated reconstructive operations \rightarrow to change The Sex into male sex

4- The Gonads \Rightarrow have extremely High rate of malignant changes



after all these considerations
[Better reared as Female after gonadal excision]

E Gonadal Aggenesis:-

(Vanishing testis Syndrome) ^{آلامني}
(Agonadia - rudimentary testis & -
empty pelvis & - testicular regression &)

• Genetic sex \rightarrow 46 XY karyotype.

• Result from \rightarrow Loss of Vascular
Supply of the Testis During the
Intrauterine descent

• lead to \rightarrow many Forms of abnormal
genital organs
 \downarrow
depend on the time of this regression

II Disorders with Male external genitalia

A KlineFelter & :-

- XX Y Syndrome

- ptn have (47 XXY) karyotype

- or other variations of additional X

- The phenotypic sex \rightarrow Male

Small testis

Gynecomastia
+ Infertility

Impaired
Sexual
maturation

Azoospermia

B Sex Reversal Syndrome :-

- XX Syndrome

- 46 XX karyotype

- Phenotypic sex \rightarrow Male

\rightarrow D.t presence of DNA fragments of
The testis determining Factor (TDF) on
The short arm of the X-chromosome \rightarrow
Transmitted to it from Y-chromosome

C XYY Syndrome :-

- 47 Xyy karyotype.

- Tall - abnormal Spermatogenesis

- Pustular acne - Criminal antisocial
Behavior \rightarrow

explained By: intellectual dysfunction

- 8) - Those men have → Normal behaviour and normal Fertility

D Persistent Mullerian Duct Syndrome

- Result From: Failure of the Foetal testis to produce (MIS)
OR Failure of the Mullerian Duct to respond to it
So the Duct grows into Uterus or Fallopian Tubes
- The ptn → present During infancy e.g. inguinal Hernia in a completely normal male
→ This hernia may contain → Uterus OR Fallopian T.

Treatment :-

The fact that the vas deferens may be adjacent to the Uterus and great care should be taken During Herniotomy to not injure it

E Micropenis :-

D.f :-

- ↳ normally → The penis start growth since the (12th - 14th) weeks of gestation its length about :- 3 mm to reach the length 3.5 cm (± 0.8) at Birth
- it ↑ in length During this period By more Than 10 times
- The growth Slow Down → till puberty when it retains its High Rate again to Reach the adult length of about 13 cm (± 1.6)

↳ Micropenis

- Diminished penile size By at least 2.5 Standard Deviation Below mean size (when penile length < 2 cm at Birth)

Diagnosis according to Rules :-

- when suspected → suppress the pubic fat inside and stretch the penile shaft to outside then measure its Stretch length

• Aetiology :-

↳ Normally → The penis passes By 2 phases of intrauterine development :-

Formation phase

- occur in First Trimester
- the penis undergoes → Complete formation depending on :-

Dihydrotestosterone
Produced under the effect of :- maternal chorionic gonadotrophins

Growth phase

- occur in: 2nd - 3rd trimesters
- penis undergoes :- Complete growth
- Depending on:
Dihydrotestosterone
- Produced under the effect of the foetal pituitary gonadotrophins

↳ Micropenis

- occur Due to :- inadequate androgens During The growth phase

(after complete formation of penis)

- if this occur During the Formation phase
Result in → Hypospadias, OR Ambiguous Genitalia, But Not micropenis

• pathology of this ↓↓ Androgens :- (9)

① Hypothalamic Disorders

- Kallmann's Syndrome
- Prader-Willi's

② Pituitary Disorders

- pituitary aplasia
- Isolated LH deficiency
- anencephaly
- growth Hormone deficiency

Testicular Disorders

- Primary Testicular failure

• Diagnosis :-

Clinically:-

- penis :- Reduced size
 - ↳ normal direction
 - ↳ normal cavernous tissue, urethral meatus

- may associated e'
Small undescended Testis

- after puberty: Feminine Body, Body Hairs

Laboratory

- normal Karyotype 46 XY
- One of Hormonal anomalies

- MRI → should Done for any hypothalamic - pituitary defect

- erection → Normal
- ejaculation → Not occur

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Treatment:

- still controversial
- individualized for each case
- Mild Cases:
Not Required specially the erectile function is preserved.

Moderate Cases:

Hormonal = 25mg/month of parenteral testosterone for 3 months only → to avoid its side effects on sexual growth

Transdermal Testosterone:

its Better start as early as possible for proper psychosexual development and because: The 5- α Reductase activity and androgen Receptors are abundant in the genital organs of the infants compared to Adults
→ Response Better in younger age

- Early Exposure of the penis to: Androgens Before puberty → Reduce its Response to Androgens after puberty
↳ End Result: Small penis

- Surgical implantation → Few cases may benefit from it (Juvenile Sized penile Prosthesis)

- in Severe Cases → OR Resistant Hormonal therapy
↳ Early sex reassignment → should performed.

Penile Agensis:-

↳ Regarded as a Cause of ambiguous genitalia

- Rare anomaly < 100 Cases in the world.

- Cause → unknown (Primary lack of development of the genital tubercle) No Endocrine disorders

- Mt : depend on Early Corrective Surgery For Sex reassignment toward → Female with early testis Removal → to prevent Virilization of the Brain